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Pyramidospora quadricellularis sp. nov. on submerged leaves from Brazil

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Abstract — *Pyramidospora quadricellularis*, a new species collected on submerged decaying leaves in Brazil, is described and illustrated. It is characterized by 4-celled, hyaline, smooth conidia. Illustrations and a comparative table of the described species of *Pyramidospora* are provided.

Key words — asexual fungi, systematics, freshwater fungi

Introduction

Pyramidospora, established by Nilsson (1962) and typified by *P. casuarinae* Sv. Nilsson, comprises eight species (Ingold 1975, Index Fungorum 2015). The genus is distinguished by conidiophores that are distinct, septate, and hyaline and monoblastic determinate terminal conidiogenous cells. The conidia are more or less pyramid-like, stellate to stauroform, and multicellular, composed of hyaline globose cells that sometimes form a moniliform branched or irregularly complex conidial body. A fungus collected during a mycological survey of freshwater fungi associated with submerged leaves in streams at a Brazilian Atlantic Forest is herein described as new *Pyramidospora* species and compared with other described species (Table 1).

Materials & methods

During an expedition in April 2015 through "Refúgio de Vida Silvestre Matas do Sistema Gurjaú," samples of submerged decaying leaves were placed in sterile glass jars with water from the site, taken to the laboratory, and processed according to Ingold (1975) and Schoenlein-Crusius & Milanez (1989). Mounts were prepared in lactic acid 90%, and measurements made at a magnification of ×1000. Photomicrographs were obtained with a Nikon Eclipse Ni-U microscope with bright field and DIC optics. The holotype was deposited in the Herbarium of Universidade Federal de Pernambuco, Recife, Brazil (URM).

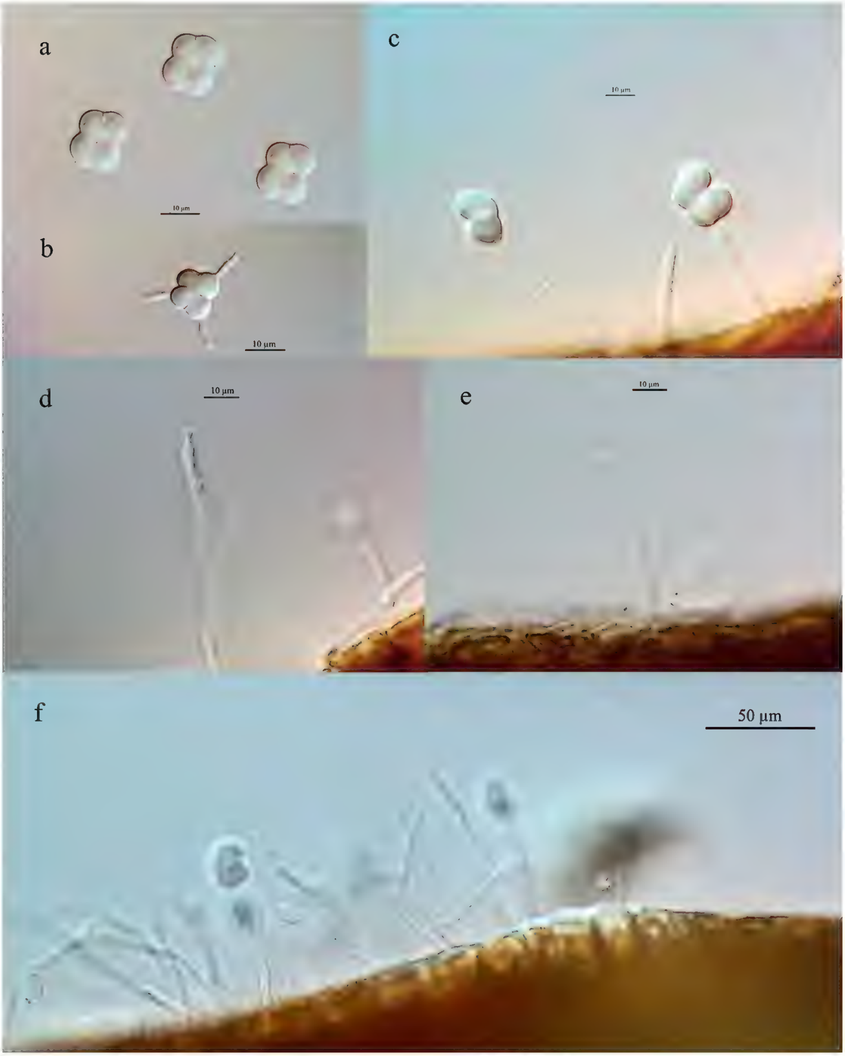

Fig. 1. *Pyramidospora quadricellularis* (holotype, URM 87706): A, B. Conidia. C–F. Conidiophores, conidiogenous cells, and conidia.

Taxonomy

Pyramidospora quadricellularis M.S. Oliveira, Malosso & R.F. Castañeda, sp. nov.

FIG. 1

MYCOBANK MB 812756

Differs from all other *Pyramidospora* spp. by its 4-celled conidia.

TYPE: Brazil, Pernambuco, Jaboatão dos Guararapes, Refúgio de Vida Silvestre Matas do Sistema Gurjaú, 8°13′S 35°3′W, 85 m alt., on submerged decaying leaves of an unidentified plant in a stream, 13.IV.2015, coll. M.S. Oliveira (**Holotype**, URM 87706).

ETYMOLOGY: Latin, *quadri-* (= four) + *-cellularis* (= celled).

COLONIES on the natural substrate effuse. Mycelium mostly superficial. Hyphae septate, branched, hyaline, 2–2.5 µm diam, smooth. CONIDIOPHORES distinct, erect, straight or decumbent, mostly single, sometimes branched, cylindrical, abruptly attenuated at the apex, 0–7-septate, smooth, ≤50 µm long, 3–4 µm wide. CONIDIOGENOUS CELLS monoblastic, terminal, determinate, integrated in conidiophores and branches, 5–15 × 2.5–3 µm, denticulate with small (1.5–2 µm long) narrow cylindrical teeth. CONIDIA solitary, acrogenous, square rounded to tetrad-shaped or shamrock leaf-shaped, 13–15 × 15–17 µm, hyaline, smooth, sometimes guttulate, composed of 4 globose cells, hyaline, 4–6 µm diam, sometimes with a germ tube.

NOTE: With 4-celled conidia, *P. quadricellularis* is unique and does not resemble any of the described *Pyramidospora* species (TABLE 1; FIGS 2, 3).

TABLE 1. Morphological comparison of conidia of *Pyramidospora* species

SPECIES	SHAPE	BRANCHES	SIZE (µm)	REFERENCE
P. casuarinae	Pyramid-like	6–8	15–20 × 12–18	Nilsson (1962)
P. constricta	Stellate to irregular	2–5	23–47 long	Singh (1972)
P. densa	Stellate	6–8	29–37 wide	Alasoadura (1968)
P. fluminea	Stellate	3–5	16–23 long	Miura & Kudo (1971)
P. herculiformis	H-shaped	4	11–17 long	Singh (1976)
P. quadricellularis	Tetrad-shaped	2	13–15 × 15–17	This paper
P. ramificata	Grape cluster-shaped or irregular	6–7	17–29 long	Miura & Kudo (1971)
P. robusta	Stellate or irregular moniliform cluster	8–13	42–57 long	Moreira & Schoenlein-Crusius (2012)
P. stellata	Stellate	4	15–25 long	Sinclair & Morgan-Jones (1979)

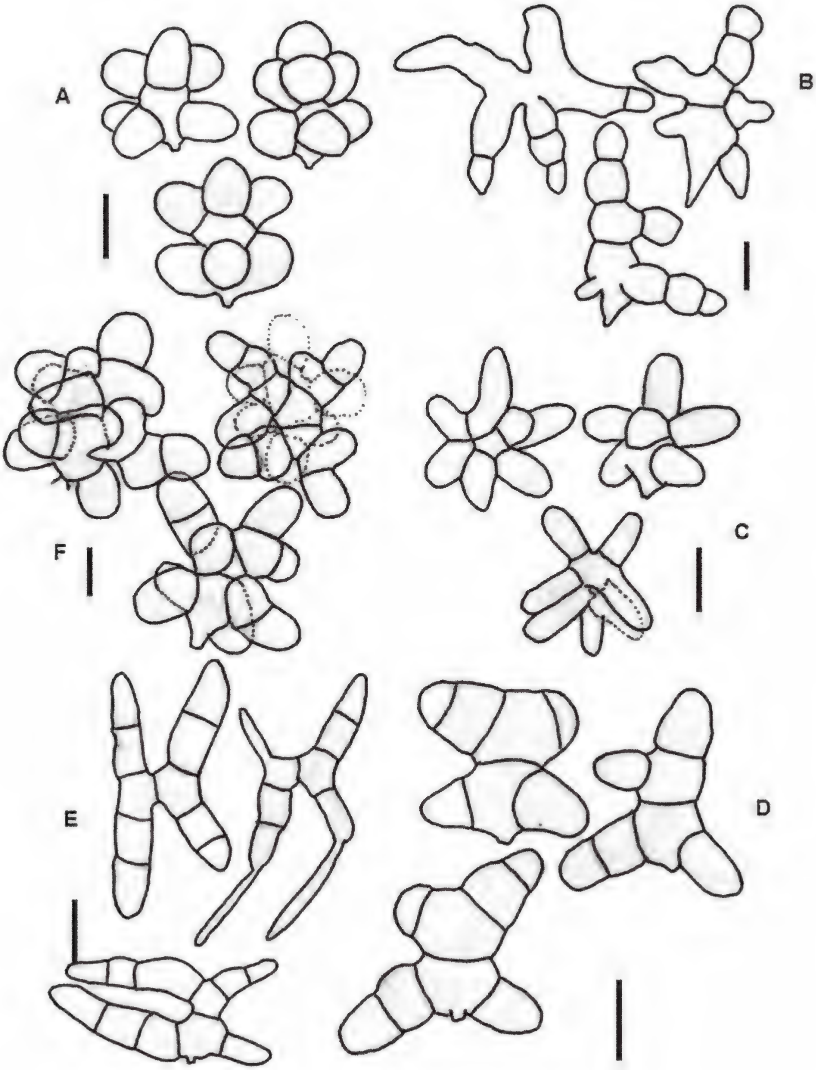

Fig. 2. Conidia of *Pyramidospora* species, redrawn or adapted from original descriptions: A. *P. casuarinae* (Nilsson 1962). B. *P. constricta* (Singh 1972). C. *P. densa* (Alasoadura 1968). D. *P. fluminea* (Miura & Kudo 1971). E. *P. herculiformis* (Singh 1976). F. *P ramificata* (Miura & Kudo 1971). Scale bars = 10 µm.

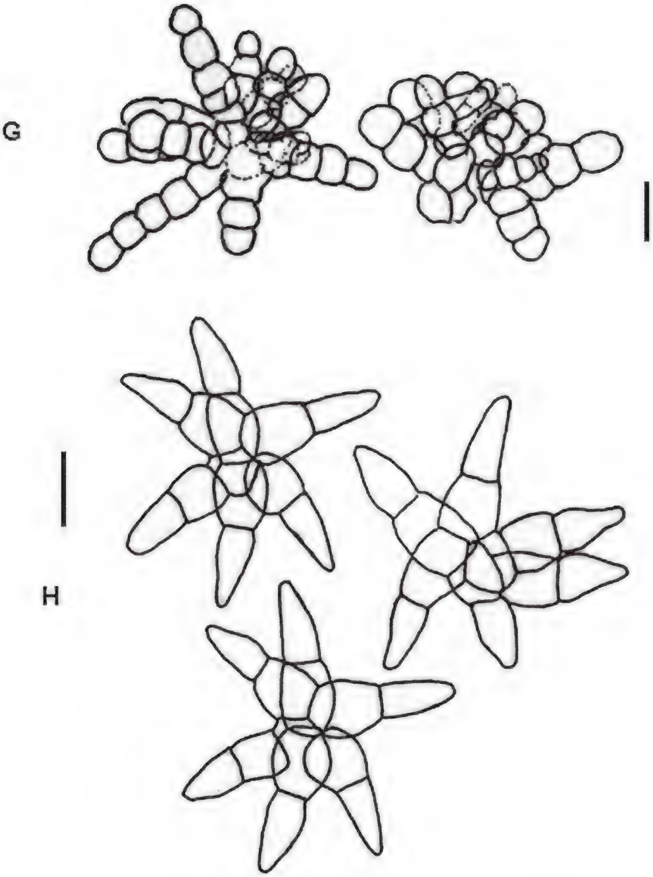

Fig. 3. Conidia of *Pyramidospora* species, redrawn or adapted from original descriptions: G. *P. robusta* (Moreira & Schoenlein-Crusius 2012). H. *P. stellata* (Sinclair & Morgan-Jones 1979). Scale bars = 10 µm.

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Literature cited

Alasoadura SO. 1968. Some aquatic hyphomycetes from Nigeria. Transactions of the British Mycological Society 51: 535–540. http://dx.doi.org/10.1016/S0007-1536(68)80023-3

Index Fungorum. 2015. http://www.indexfungorum.org/names/names.asp. Accession date: 2015-05-29.

Ingold CT. 1975. An illustrated guide of aquatic and water borne hyphomycetes (fungi imperfecti) with notes on their biology. Freshwater Biological Association, Scientific Publication 30. 96 p.

Miura K, Kudo MY. 1971. Two new species of filamentous fungi from Japan. The Journal of Japanese Botany 46: 39–46.

Moreira CG, Schoenlein-Crusius IH. 2012. Nova espécie e novos regsitros para o Brasil de hifomicetos observados em folhedo submerso colectados no Parque Municipal Alfredo Volpi, São Paulo, SP, Brasil. Hoehnea 39: 521–527. http://dx.doi.org/10.1590/S2236-89062012000400001

Nilsson S. 1962. Some aquatic hyphomycetes from South America. Svensk Botanisk Tidskrift 56: 351–361.

Schoenlein-Crusius IH, Milanez AI. 1989. Sucessão fúngica em folhas de *Ficus microcarpa* L. f. submerses no Lago Frontal situado no Parque Estadual das Fontes do Ipiranga, São Paulo. Revista de Microbiologia, São Paulo 20: 95–101.

Sinclair RC, Morgan-Jones G. 1979. Notes on hyphomycetes. XXXII. Five new aquatic species. Mycotaxon 9: 469–481.

Singh N. 1972. *Pyramidospora constricta* sp. nov., a new aquatic hyphomycete. Transactions of the British Mycological Society 59: 336–339. http://dx.doi.org/10.1016/S0007-1536(72)80027-5

Singh N. 1976. *Pyramidospora herculiformis* sp. nov., a new aquatic hyphomycete from Sierra Leone. Transactions of the British Mycological Society 66: 347–350. http://dx.doi.org/10.1016/S0007-1536(76)80070-8